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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/468,614	12/21/1999	ALOK SINHA	042390.P7752	3838

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EXAMINER

CAO, DIEM K

ART UNIT	PAPER NUMBER
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2126

DATE MAILED: 03/31/2003

8

Please find below and/or attached an Office communication concerning this application or proceeding.

PR4

**Office Action Summary**

Application No.

09/468,614

Applicant(s)

SINHA ET AL.

Examiner

Diem K Cao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 January 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 28 January 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.  
 If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☐ All   b) ☐ Some \*   c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
 a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>6</u> | 6) <input type="checkbox"/> Other:  |

**DETAILED ACTION**

1. This Office Action is in response to the Amendment filed on 1/28/2003.
2. Claims 1-28 remain in the application. Applicant has amended claims 1, 10, 17, 22, and 24-26.

*Drawings*

3. The corrected or substitute drawings were received on 1/28/2003. These drawings are approved by the Examiner.

*Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 10-11, 13-14, 16, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hinckley (U.S. 5,828,882) in view of Topff et al. (U.S. 6,026,500) further in view of Bradley et al. (U.S. 6,182,182 B1).

As to claim 10, Hinckley teaches (col. 4, lines 39-67) registering (registration request 102) the application (program 104) with a programming interface (the event notification facility 100), detecting occurrence of the event with a monitor service (event detection hardware and/or software) that is separate from the programming interface (the event notification ... connected to event detection hardware/software), upon occurrence of the event (event 110 occurs), notifying the application via the programming interface (call 106 to the handler routine 108 of the program).

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However, Hinckley does not teach the event is a hardware event. Topff teaches upon occurrence of the hardware event (event signal 545; col. 3, line 36 – col. 4, line 39 and Fig. 1), notifying the application (transmitted from ... to a help desk application program; col. 4, lines 4-39). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Topff to the system of Hinckley because it would provide Hinckley system a method to monitor and process the hardware event without delay (col. 2, lines 13-42).

However, Hinckley does not teach an operating system module to interface with a device, and a monitor service operating above the operating system module. Bradley teaches an operating system module to interface with a device (The I2O architecture ... host computer's processor; col. 1, line 45 – col. 2, line 26). It would have been obvious to one of ordinary skill in the art to apply the teaching of Bradley to the system of Hinckley as modified because it would provide the user with the ability to design cross-platform intelligent I/O devices and software drivers. Although Hinckley as modified does not explicitly teach the monitor service operating above the operating system, one of ordinary skill in the art would implemented it because Hinckley already taught a programming interface connected to a monitor service, and Bradley disclosed an operating system module to interface with a device.

As to claim 11, Hinckley teaches (col. 4, lines 39-56) allocating a data storage location (registrations repository 114), and storing (storing) data (information) in the data storage location.

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**As to claim 13**, Hinckley as modified by Topff teaches storing data identifying the hardware event (Each entry of the event table 200 corresponds to a type of event 110; col. 4, lines 60-65).

**As to claim 14**, Hinckley as modified by Topff does not explicitly teach storing a hardware identification value that identifies a storage medium associated with the event. Hinckley as modified teaches storing data identifying the hardware event (Each entry of the event table 200 corresponds to a type of event 110; col. 4, lines 60-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made that the system of Hinckley would have to store the hardware identification value that identifies a storage medium because the application would need information related to the event in order to process that event (col. 9, lines 39-50).

**As to claim 16**, Hinckley teaches notifying the application includes providing a callback function (handler routine; col. 4, lines 51-56).

**As to claim 22**, see rejection of claim 10 above. However, Hinckley does not explicitly teach a processor, a medium for storing instructions, and a medium for storing data. However, the instructions (event notification facility) are executed in a computer. Inherently, a processor, a medium for storing instructions, and a medium for storing data must be included in the computer.

6. Claims 1-2, 4-7, 9, 15, 17, 19-20, and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hinckley in view of Corrington et al. (U.S. 6,076,142) further in view of Bradley et al. (U.S. 6,182,182 B1).

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As to claim 1, Hinckley teaches (col. 4, lines 39-56) registering (registration request 102) the management application (program 104) with an event application programming interface (event notification facility 100 includes a program interface 102), detecting occurrence of an event (event detection hardware and/or software), notifying the management application of the event via the event application programming interface (event manager perform ... of the program).

However, Hinckley does not teach detecting occurrence of an event from a RAID with the RAID monitor service. Corrington teaches (col. 11, line 41 – col. 12, line 13) detecting (monitor) occurrence of an event from a RAID (status and failures of the components) with the RAID monitor service (ICU Module and Monitor Utility). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Corrington to the system of Hinckley because it would provide the user the options to check and correct the RAID system events (col. 2, lines 38-63).

However, Hinckley does not teach an operating system module to interface with a RAID device, and a RAID monitor service operating above the operating system module. Bradley teaches an operating system module to interface with a device (The I2O architecture ... host computer's processor; col. 1, line 45 – col. 2, line 26). It would have been obvious to one of ordinary skill in the art to apply the teaching of Bradley to the system of Hinckley as modified because it would provide the user with the ability to design cross-platform intelligent I/O devices and software drivers. Although Hinckley as modified does not explicitly teach the monitor service operating above the operating system, one of ordinary skill in the art would implemented

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it because Hinckley already taught a programming interface connected to a monitor service, and  
~~Bradley disclosed an operating system module to interface with a device.~~

As to **claim 2**, Hinckley as modified by Corrington teaches (col. 4, lines 39-56) updating the event application programming interface (When an event 110 occurs, ... to an event manager 118) with the RAID monitor service upon occurrence of the event (event interface 116 connected to event detection hardware and/of software).

As to **claim 4**, Hinckley teaches registering the management application includes identifying the type of event (Each entry of an event table ... type of event 110; col. 4, lines 39-56).

As to **claim 5**, Hinckley teaches registering the management application includes providing the event application programming interface with a callback function (handler routine; col. 4, line 39 – col. 5, line 17).

As to **claim 6**, Hinckley teaches (col. 4, lines 39-56) the event application programming interface (event manager 118) use the callback function to (handler routine 108) notify the management application (program 104) of the occurrence of the event (event 110 occurs).

As to **claim 7**, Hinckley does not explicitly teach creating an interprocess communication between the RAID monitor service and the management application. However, Hinckley teaches event detected by the monitor service is notified to the management application (col. 4, lines 39-67). It would have been obvious an interprocess communication between the RAID monitor service and the management application must be established.

As to **claim 9**, Hinckley teaches (col. 4, lines 39-56) the event application programming interface (event notification facility 100, event manager 118) returns (performs a procedure call)

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a callback function (handler routine 108) upon notification of the event (when an event 110 occurs).

As to claim 15, Hinckley teaches notifying the programming interface of the occurrence of the event with a monitor (event manager perform ... of the program; col. 4, lines 39-56). However, Hinckley does not teach detecting occurrence of an event from a RAID with the RAID monitor service. Corrington teaches (col. 11, lines 41 – col. 12, lines 13) detecting (monitor) occurrence of a hardware event from a RAID (status and failures of the driver) with the RAID monitor service (ICU Module and Monitor Utility). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Corrington to the system of Hinckley because it would provide the user a method to check and correct the RAID system events (col. 2, lines 38-63).

As to claim 17, it is the same as the method of claim 1 except it is a computer product claim.

As to claim 19, Hinckley as modified by Corrington teaches notify the management application of a hardware event (When an event occurs ... the program; col. 4, lines 39-56).

As to claim 20, Hinckley does not explicitly teach the hardware event is selected from the group consisting of a disk drive failure, disk drive initialization, array migration, and data recovery. Corrington teaches (col. 5, line 9 – col. 6, line 65) the hardware event is selected from a group consisting of a disk drive failure (drive module failure occurs), disk drive initialization (create RAID set), array migration (designate spare drives), and data recovery (rebuild failed drive). It would have been obvious to one of ordinary skill in the art at the time the invention was



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made to apply the teaching of Corrington to the system of Hinckley so it can monitor and process the status of the RAID system (col. 5, lines 60-67).

**As to claim 26**, it is the same as the method of claim 1 except it is an apparatus claim.

**As to claim 27**, Hinckley teaches (col. 4, lines 39-56) registering (registration request 102) the management application (program 104) with an event application programming interface (event notification facility 100 includes a program interface 102).

**As to claim 28**, Hinckley teaches (col. 4, line 39 – col. 5, line 40) instructions that cause the processor to provide the function of the event programming interface (The event notification ... connected to event detection hardware and/or software).

7. Claims 3 and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hinckley in view of Topff et al. and Bradley et al. and further in view of Corrington et al. (U.S. 6,076,142).

**As to claim 3**, Hinckley does not explicitly teach registering includes identifying a storage medium associated with the event. Topff teaches upon occurrence of the hardware event (event signal 545; col. 3, line 36- col. 4, line 39 and Fig. 1), notifying the application (transmitted from ... to a help desk application program; col. 4, lines 4-39). It would have been obvious to apply the teaching of Topff to monitor the hardware event to the system of Hinckley because Hinckley's system would have to store the hardware identification value that identifies a storage medium because the application would need information related to the hardware event in order to monitor or process that event (col. 9, lines 39-50).

**As to claim 23**, Hinckley does not explicitly teach the management application is selected from the group consisting of a desktop management program, a RAID system

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management application, and a RAID monitor application. Topff teaches the management application is a desktop management program. Corrington teaches a RAID monitor application.

It is obvious there are many programs to monitor the RAID system and any of them could work with the system of Hinckley.

As to claim 24, Hinckley does not explicitly teach a RAID device and a RAID monitor service. Corrington teaches a RAID device (RAID; col. 11, line 41 – col. 12, line 13) and a RAID monitor service (ICU Module and Monitor Utility; col. 11, line 41 – col. 12, line 13). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Corrington to the system of Hinckley because it provide Hinckley's system a better monitor service for RAID system.

As to claim 25, Hinckley does not teach an intelligent input/output controller to interface with the RAID device. Bradley teaches an intelligent input/output controller to interface with the device (implement the intelligent I/O ... processor; col. 1, line 45 – col. 2, line 26).

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hinckley in view of Topff et al. and Bradley et al. further in view of Solomon et al. (U.S. 5,305,326).

As to claim 12, Hinckley as modified by Topff does not teach storing data identifying an input/output processor. Solomon teaches a RAID system utilizes an I/O processor for controlling the overall system (col. 2, lines 23-57). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Solomon to the system of Hinckley to monitor the I/O processor because it would provided an improved techniques for handling any failure condition of the RAID system.

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9. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hinckley in view of Corrington et al. and Bradley et al. further in view of Solomon et al. (U.S. 5,305,326).

As to claim 21, refer to claim 12 above for rejection.

10. Claims 8 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hinckley in view of Corrington et al. and Bradley et al. and further in view of Skarbo et al. (U.S. 5,805,886).

As to claims 8 and 18, Hinckley does not explicitly teach unregistering the management application with the event application programming interface. Skarbo teaches (col. 7, lines 40-45) unregistering (unregister) the management application (communication application) with the event application programming interface (address book). It would have been obvious to one of the ordinary skill in the art to apply the teaching of Skarbo to the system of Hinckley because it would provide the management application a way to unregister itself when it doesn't interesting in event notification.

#### *Response to Arguments*

11. Applicant's arguments with respect to claims 1-28 have been considered but are moot in view of the new ground(s) of rejection.

#### *Conclusion*

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the ~~THREE-MONTH~~ shortened statutory period; then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Diem K Cao whose telephone number is (703) 305-5220. The examiner can normally be reached on Monday - Friday, 9:00AM - 5:00PM.

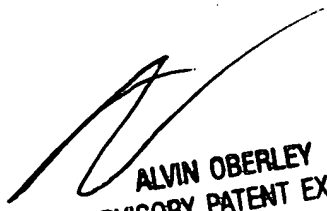
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

**Any response to this action should be mailed to:**  
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**Or fax to:**

- AFTER-FINAL faxes must be signed and sent to (703) 746-7238.
- OFFICIAL faxes must be signed and sent to (703) 746-7239.
- NON-OFFICIAL/DRAFT faxes should not be signed, please send to (703) 746-7140.

Diem Cao  
March 17, 2003

  
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